

To: Lana.Davis@shell.com[Lana.Davis@shell.com]
From: Seyfried, Erin
Sent: Fri 9/20/2013 5:51:09 PM
Subject: Clarification Regarding a Geotech Borehold Drilling Technology

Hi Lana –

I just received comments back on my Fact Sheet and it appears I need to elaborate on the “Jumbo Piston Corer” drilling technology. From the presentations and Shell’s Ancillary Activities Report (submitted to BOEM last Spring) I understood this technology to only be capable of drilling to depths less than 50 feet (therefore, it can’t be used for deeper boreholes) and that it provides a “continuous” core sample (i.e. 1 full core, as compared to segmented cores with CPT sounds taken between core samples within the borehole). Also, it was my understand that there is no discharge of cuttings associated with the technology. Is that correct? If there is no discharge of cuttings associated with this technology, is that because they are brought up to the vessel/facility?

To be clear, I am just trying to better describe this activity in the fact sheet (i.e. the depth restrictions associated with this tech, the continuous coring capabilities and the cuttings issue).

Any additional information/clarifications that you can provide will be greatly appreciated!

Thank you!

-Erin

Below is the Fact Sheet language regarding the different drilling technologies – please let me know if I have made any inaccurate statements.

Seabed-based drilling systems are operated remotely and result in the collection of continuous soil boring samples. This technology can conduct rotary drilling, piston

coring, and cone penetrometer (CPT) soundings. Seabed-based drilling systems do not require the use of drilling fluids due to the fact that the borehole is cased from the seafloor mudline to the bottom of the hole. The casing is removed upon completion of the borehole. Due to the continuous core sampling ability, the amount of cuttings deposited at the seafloor is much less compared to the conventional rotary drilling technology (discussed below). This technology, however, has not been tested in Arctic conditions and therefore would not be used to collect deep (greater than 50 ft in depth) soil boring samples (cores) for pipeline and/or platform assessments. The seabed-based drilling technology may be used during shallow borehole assessment surveys of less than or equal to 50 feet below the seafloor.

The Jumbo Piston Corer and Cone Penetrometer Technology (CPT) has been used in Arctic conditions for shallow borehole assessments. It does not require the use of drilling fluids and does not result in the discharge of cuttings at the seafloor.^[KO1] However, this technology is limited to drilling depths of 20 – 30 feet below the seafloor and requires the coring device to be launched multiple times per hole to collect sufficient core samples. After the soil borings have been collected, additional CPT soundings are conducted.

Conventional rotary drilling technology is the primary system proposed for use in the Chukchi and Beaufort Seas. This technology has the ability to drill to depths up to 499 feet below the seafloor. It provides the operator with soil boring samples and CPT data. This technology generally requires the use of seawater or drilling fluids as a lubricant, and would result in a discharge of drilling fluids (if used) and cuttings at the seafloor. The use of drilling fluids is dependent on the desired depth of the borehole and the subsurface sediment characteristics. Among other things, drilling fluids are used to helping to maintain formation pressures at greater depths

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[KO1] Why no discharge? Because all cuttings are captured?